کامیار نظری — دوازدهم تجربی A — ۱۸

$\Delta \leq 0 \quad (m-1)^2 - 4 \times 3(m-4) \leq 0 \qquad |a^3 + a^2| = 0 \Rightarrow a^2(a+1) = 0 \quad \begin{cases} a = 0 \\ a = -1 \end{cases}$

$(m-7)^2 \leq 0 \qquad m = 7$

(۱

$\lim \dfrac{\sqrt{3}\,|x+1|}{|x+1| \times |x^2 - x + 1|} = \dfrac{\sqrt{3}}{3} \qquad \dfrac{2\sin b}{3} = \dfrac{\sqrt{3}}{3} \rightarrow \sin b = \dfrac{\sqrt{3}}{2} \Rightarrow b = \dfrac{\pi}{3}$ (۱

(پایین صفحه)

$5x^2 - ax - b = 0 \rightarrow x = 1 \qquad \lim \dfrac{x^2 + ax + b}{x - 1} \xrightarrow{\text{هوپیتال}} 2x + a$ (۲

$x^2 + ax + b = 0 \rightarrow x = 1$

(۲

$\left.\begin{matrix} 5 - a + b = 0 \\ 1 + a + b = 0 \end{matrix}\right\} \Longrightarrow \begin{matrix} 4 - 2a = 0 \\ a = 2 \\ b = -3 \end{matrix} \qquad \left[\dfrac{-3-4}{3}\right] = -3$

$\dfrac{2x + 1}{-a} = 1 \Rightarrow f(5) = b(5 - [-5]) = 10b$ (۳

$10b = \dfrac{7}{3} \Rightarrow b = \dfrac{7}{30}$

$a = -3$

(۲

$\dfrac{x^2 + \cancel{ax} + \cancel{b}}{a(\cancel{x} - x)} \xrightarrow{\text{هوپیتال}} \dfrac{x^2 + x - 2}{a(1-x)} \qquad a = \left(-\dfrac{7}{10}\right)$

$\lim \dfrac{|x^2 + x - 2|}{a(1-x)} = \dfrac{28}{-4 \times -3} = \dfrac{7}{3}$

جمع و صادره $\Rightarrow a[x] + b[x] + a + b[a] + b(a+b)[x] + a + b + b[a]$

(۴ $\quad a + b = 0 \Rightarrow f(x) = b[a] \qquad \dfrac{a[a]}{f(a)} = \dfrac{a[a]}{-a[a]} = -1$ (۳

$f(x) = b[x^2 - ax] - 2a$ (۵

$\rightarrow b = 0 \qquad f(2) = -2a$

$\dfrac{a}{f(b)} = \dfrac{a}{-2a} = -\dfrac{1}{2}$ (۲

$$\text{هم‌رسانی} \Rightarrow \frac{۲x+m}{-1}=۲$$

$$f(a)=f(۲a)=a=0$$

$۲a+m=-۲$ $\quad a^۲+am+n=0$ $\quad ۴a^۲+۲am+n=0$

$a=۲$ $\quad m=-۶$ $\quad n=۸$ $\Leftarrow \begin{cases} ۳a^۲+am=0 \\ a(۳a+m)=0 \end{cases}$

$\boxed{n-m=۱۴}$

۶) ۲

$$\lim_{x\to k^+} f(x) = (1-a)(k)+(۳a^۲-1)(-k-1)$$

باهم برابر هستند $\Rightarrow ۳a^۲+a-۲=0$

$$\lim_{x\to k^-} f(x) = (1-a)(k-1)+(۳a^۲-1)(-k)$$

$a=\begin{cases} -1 & \text{غق} \\ \frac{۲}{۳} & ✓ \end{cases}$ محاسبه شده

۷) ۲

$$a=\frac{۲}{۳} \Rightarrow \lim_{x\to k^+} f(x) = -\frac{1}{۳} \qquad f(1۲)=b\sin\left(\frac{۳\pi}{۲}\right)\to -b=-\frac{1}{۳} \quad b=\frac{1}{۳}$$

$$\Rightarrow \frac{a}{b}=\frac{\frac{۲}{۳}}{\frac{1}{۳}}=۲$$

$$=\frac{|x-1|\,|x+m+1|}{|x-1|\,(m(|x+1|)+1)} = \frac{|m+۲|}{۲m+1} \to \frac{m+۲}{۲m+1}=\frac{m}{m+۲} \Rightarrow m\neq ۲$$

۸) ۲

$$|m+۲|(m+۲)=m(۲m+1) \qquad (m+۲)^۲=m(۲m+1) \Rightarrow m=-1,۴$$

$$\lim_{x\to\frac{1}{۲}} = \frac{۷}{۸} \qquad \lim_{x\to -1} = \cancel{k} \quad \text{غق}$$

$$a^۳+(m-۲)a+a^۲=0 \qquad a(a+1)=0 \qquad \lim \frac{\sqrt{۳}\,|-(x+1)|}{|x^۳+1|}$$

$$a(a^۲+a+(m-۲))=0 \qquad a=-1 \qquad m=۲$$

۹) ۲

$$=\frac{\sqrt{۳}\,|x+1|}{|x+1|\,|x^۲-x+1|}=\frac{\sqrt{۳}}{۳}$$

$$\lim_{x\to 0^+} \frac{x^۲+x}{x^۲+ax}=\frac{۲x+1}{۲x+a}=\frac{1}{a}$$

۱۰) ۱

$$\lim_{x\to 0^-} = \frac{x^۲+x}{x^۲-ax}=\frac{۲x-1}{۲x-a}=\frac{1}{a}$$

$$\frac{۲a-1}{۲a+۲}=\frac{1}{a} \qquad ۲a^۲-a=۲a+۲$$

$$۲a^۲-۳a-۲=0$$

$$a=\begin{cases} -\frac{1}{۲} & \text{غق} \\ ۲ & ✓ \end{cases} \qquad \lim_{x\to\frac{1}{۲}} = \frac{\frac{1}{۱۶}+\frac{1}{۲}}{\frac{1}{۱۶}+\frac{1}{۱۶}} = \frac{۵}{۱۶}\cdot\frac{۸}{1}=\frac{۵}{۲}$$

$$\lim_{x\to 0^+}\frac{x^2+|x|}{x^2+a|x|}=\frac{0}{0}\to\lim_{x\to 0^+}\frac{x^2+x}{x^2+ax}=\lim_{x\to 0^+}\frac{x(x+1)}{x(a+x)}=\frac{1}{a}$$

$$\lim_{x\to 0^-}\frac{x^2+|x|}{x^2+a|x|}=\frac{0}{0}\to\lim_{x\to 0^-}\frac{x^2-x}{x^2-ax}=\lim_{x\to 0^-}\frac{x(x-1)}{x(x-a)}=\frac{-1}{-a}=\frac{1}{a}$$

سوال ۱۰

$$f(0)=\frac{2a-1}{2a+2}=\frac{1}{a}\to 2a^2-a=2a+2\to 2a^2-3a-2=0\to\begin{cases}a=2\\ a=-\frac{1}{2}\ \times\end{cases}$$

$$a=2\to\lim_{x\to\frac{1}{2}}f(x)=\lim_{x\to\frac{1}{2}}\frac{x^2+x}{x^2+2x}=\frac{\frac{1}{4}+\frac{1}{2}}{\frac{1}{4}+1}=\frac{\frac{3}{4}}{\frac{5}{4}}=\frac{3}{5}$$

سوال ۱۱

a ← تنها ریشه زیر رادیکال و باید مخرج را هم صفر کند

$$\Delta=0\to(m+3)^2-4\left(\frac{m}{2}\right)\times 6=0\to m^2+6m+9-12=0\to m^2-6m+9=0\to m=3$$

$$\lim_{x\to a}\frac{\sqrt{6x^2+6x+\frac{3}{2}}}{|2x^3+a^2|}=\frac{\sqrt{6\left(x^2+x+\frac{1}{4}\right)}}{|2x^3+a^2|}=\frac{\sqrt{6}\left|x+\frac{1}{2}\right|}{|2x^3+a^2|}$$

$$2a^3+a^2=0\to a^2(2a+1)=0\to\begin{cases}a=0\to\frac{\text{عدد}}{0}\ \times\\ a=-\frac{1}{2}\to\frac{\sqrt{6}\left|x+\frac{1}{2}\right|}{\left|2x^3+\frac{1}{4}\right|}=\frac{0}{0}\ \checkmark\end{cases}$$

$$\lim_{x\to-\frac{1}{2}}\frac{\sqrt{6}\left|x+\frac{1}{2}\right|}{2\left|x^3+\frac{1}{8}\right|}=\frac{\sqrt{6}\left|x+\frac{1}{2}\right|}{2\left|x+\frac{1}{2}\right|\left|x^2-\frac{1}{2}x+\frac{1}{4}\right|}=\frac{2\sqrt{6}}{3}$$

$$\frac{2\tan b}{\sqrt{-\left(-\frac{1}{2}\right)}}=\frac{2\sqrt{6}}{3}\to\tan b=\frac{\sqrt{3}}{3}\to b=\frac{\pi}{6}$$